

has provided more than \$14.5 million for the purpose of preserving and restoring these important lands. This ambitious effort will save the best features of this remarkable landscape for the use and enjoyment of future generations while addressing the livelihood and health of the people who share this land.

Preliminary research tells us that these areas are important to salmon, steelhead, and other native species. As research continues, scientists are discovering that these areas support more species and life stages than previously thought and are important spawning habitat for native fish. Scientists are also discovering that floodplains contribute to the aquatic food web and help support important nutrient cycling processes. In addition to ecological benefits, floodplain restoration reduces flood damage by reducing flood stages and velocities and providing a wide area for overbank flow.

The CALFED Bay-Delta Program, one of many partners in this project,



# Sacramento River Conservation Area

The Sacramento River is the largest and most important river ecosystem in the State of California. The Sacramento River Conservation Area is a comprehensive plan which is locally driven and balances the need for conservation with voluntary protection of local land uses.



Rivers, along with their closely associated floodplain and upland areas, comprise corridors of great economic, social, cultural and environmental value. Historically, the riparian forest corridor along the Sacramento River averaged four to five miles wide. Today only five percent of the forests remain. In 1986 the California Legislature passed Senate Bill 1086 that called for the development of a management plan for the Sacramento River and its tributaries that would protect, restore and enhance both fisheries



and riparian habitat. Through extensive public outreach and the establishment of a consensus-based planning group, guiding principles were developed to govern riparian habitat management along the Sacramento River. The establishment of the Sacramento River Conservation Area, which includes approximately 213,000 acres along 222 miles of the main stem between Keswick Dam and Verona, was an outcome of this process. This program seeks to balance the existing land uses and needs with preservation and restoration actions. Participation in this program is voluntary for landowners in the conservation area and focuses on people and the environment working together. The program addresses flood management and economic concerns and provides information and education.

CALFED has provided support for both riparian and fisheries actions identified through the SB 1086 process. More than \$38 million has been dedicated to 29 projects, focused on preserving and restoring riparian habitat, providing fish protection measures and conducting research within the Sacramento River Conservation Area.

## The “Bay” in Bay-Delta

Many fish, wildlife and other living organisms that are dependent on the Delta either pass through, or spend part of their life cycle downstream of the Delta.

The ecological health of Suisun Bay, San Pablo Bay and San Francisco Bay (Bay) can influence the success and recovery of species dependent on the Delta and even the success of restoration efforts themselves. Restoration activities implemented upstream of the Bay by CALFED and others, provide direct benefits to the Bay through improved inflow, improved quality of water flowing into the Bay, improved ecological processes and functions such as foodweb support and nutrient cycling, and increased population numbers and health of ecologically important species.

Important habitat types found in the Bay Areas include permanent tidal marshes, sea-



sonal wetlands, perennial grasslands and wet meadows, agricultural lands and riparian habitats. The separation of wetlands from tidal flows and the reclamation of emergent wetlands have altered ecological processes and functions. Removing tidal action from the marsh and bayland soils has resulted in oxidation and subsidence and adverse changes in wetland soil chemistry. The loss of these important processes and functions has reduced available habitat for native species, reduced water quality and decreased the area available for dispersing flood waters and depositing suspended silt. In addition to the loss of ecological functions, the Bay continues to be at-risk from high levels of contaminants affecting water quality, introduction of non-native species especially from ships ballast water, loss of aquatic organisms to water diversions, dredging and dredge disposal, and the loss of habitat areas to development.

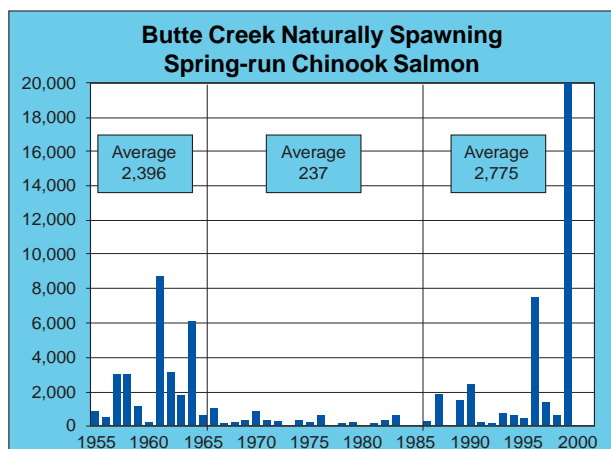
More than \$10 million has been provided for 22 projects, directly supporting habitat restoration, contaminant reduction and improved water quality, research and evaluation of non-native species and watershed support in the Bay. In addition, millions of dollars are being spent on upstream ecosystem restoration which directly benefits the Bay through improved ecological inputs.





# Butte Creek Restoration

Butte Creek is one of many important tributary streams for the Bay-Delta and one of the best modern day success stories that demonstrates the value of investing in restoration activities.



The ecological health of the Bay-Delta depends on the health of its tributary watersheds such as Butte Creek. Fall and spring-run chinook salmon and steelhead trout live and spawn in Butte Creek. The status and abundance of spring-run chinook salmon is an important measure of ecological health for Butte Creek and the Bay-Delta. As late as the 1960s, Butte Creek supported more than 4,000 adult spring-run chinook salmon. In recent years the Butte Creek spring-run chinook salmon populations have been in the range of 200-1,000 adults. The decline of Butte Creek's anadromous fishery is attributed to many factors. Many fish are lost to unscreened diversions or stranded in agricultural drains. Others are unable to negotiate the many diversion dams and barriers. Poor quantity and quality of flow and poaching also dramatically impact the fish on Butte Creek.

CALFED has been actively involved in funding the restoration of Butte Creek. More than \$5.7 million has been approved for 15 projects including fish screens, fish passage and small dam removal, watershed support and general restoration activities. In 1995, spring-run chinook salmon returns reached a record of more than 8,000, demonstrating that Butte Creek had the potential to attract a large number of spring-run chinook salmon with adequate stream flows. As a further demonstration of restoration success, this year's spring-run chinook salmon returns reached a phenomenal high of more than 20,000 adult fish.



## Battle Creek - A Unique Opportunity

Battle Creek is recognized as the watershed with one of the best potentials for restoring salmon and steelhead. Battle Creek is unique in that it is the only stream on the western rim that supports all four runs of native chinook salmon, and the only tributary capable of supporting the endangered winter-run chinook salmon.

Historic construction of dams, which are important for California's growth and economy, has been devastating to California's anadromous fish populations. These dams blocked access to valuable spawning and rearing habitat. Providing access to valuable historical habitat is an important component to the recovery of endangered and threatened anadromous fish. The Battle Creek Project is an example of the opportunities available to improve fish passage to historical habitats. To date, more than \$43 million has been approved for 19 projects including Battle Creek and fish passage improvements on other streams.

Battle Creek is a cold, spring-fed stream with exceptionally high flows during the dry season. It is the only Sacramento River tributary resistant to drought. Its remote, shaded canyons are similar to the once-productive salmon streams now blocked by Shasta Dam. Extensive historical records document Battle Creek's enormous potential for supporting all four races of salmon and steelhead. Presently, the main population of winter-run chinook salmon spawns in the Sacra-

mento River. During droughts, winter-run chinook salmon suffer severe mortality from high water temperatures. The restoration of Battle Creek will provide a unique opportunity to restore a population of the State and Federally listed winter-run chinook salmon that is protected from droughts.

The Battle Creek Project will remove five dams and ladder others. Diversions will be screened and flows improved. These actions will result in improved water quality and access to 42 miles of historical anadromous fish habitat for salmon.

